# THE EQUITY HEIST

## Bank Scanner

*User Guide & Field Reference — v6*

**WHAT'S NEW IN v6**

■ Renamed to Bank Scanner — "ICT Scanner" label updated throughout the dashboard
■ All timestamps now shown in CST (Central Standard/Daylight Time)
■ Scanner active window: 06:00–16:00 CST only — no scans outside trading hours
■ Credit optimisation: 17 credits/scan (down from 28) — full day on free plan
■ 4H candles refreshed at boot, 09:00 CST, and 13:00 CST — always current
■ Signal Called timestamp — CST date/time shown when signal first reached TRIGGER_READY
■ Stale data mode — dashboard holds last known state if API credits run out
■ Proxy badges now display correctly on all ETF-proxied instrument cards

*Built for precision, discipline, and edge refinement.*
*Scan relentlessly. Improve continuously. Execute professionally.*

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## 1. Overview

Real-time multi-asset Bank Scanner across five tradeable instruments. Liquidity sweep detection runs on 15m + 1H + 4H. PD Array bias is derived from the 1H dealing range. Execution timeframe remains 5m. Scanner is active 06:00–16:00 CST on weekdays only.

### Instruments & Proxy Map

- **BTCUSD** Bitcoin / US Dollar BTC/USD (direct)
- **XAUUSD** Gold / US Dollar XAU/USD (direct)
- **NAS100** Nasdaq 100 ■ QQQ — *~99% correlated*
- **US30** Dow Jones Industrial ■ DIA — *~99% correlated*
- **SPX500** S&P 500 ■ SPY — *~99% correlated*
- **DXY** US Dollar Index ■ UUP — *USD ETF proxy*
- **US10Y** 10-Year Treasury Yield ■ TLT — *Inverted — falling TLT = rising yield*

### Scan Timing & Active Window

- Active window: 06:00 – 16:00 CST (Monday – Friday)
- Auto-scan fires every 15 minutes at :00, :15, :30, :45 within the active window
- No scans run outside 06:00–16:00 CST — scheduler skips and logs "Off hours"
- Scan Now button is also disabled outside the active window
- Dashboard clock and all timestamps displayed in CST (auto-adjusts for CDT in summer)

### API Credits & 4H Refresh Schedule

- Data provider: Twelve Data API — free plan limit: 800 credits/day
- Credits per scan: 17 (5 tradeable instruments × 3 timeframes: 5m, 15m, 1H + 2 macro quotes)
- Scans per day: 40 (10-hour window × 4 scans/hour)
- Daily credit usage: 680 — 120 credits of headroom under the 800 free limit
- 4H candles fetched separately to preserve credit budget:

**Boot (6:00 AM)** — refreshHTFCandles() — fetches 1H + 4H for all 7 instruments (14 credits, one-time)
**09:00 CST** — refresh4HCandles() — re-fetches 4H only for all 7 instruments (7 credits)
**13:00 CST** — refresh4HCandles() — re-fetches 4H only for all 7 instruments (7 credits)
**Every 15-min scan** — 1H fetched inline per tradeable instrument. 4H read from cache (no extra credits)

■ *Total daily credits including 4H refreshes: 680 + 14 (boot) + 14 (two 4H refreshes) = 708 credits. Still within the 800-credit free plan limit.*

## 2. Summary Bar

Six cards across the top of the dashboard. Snapshot of all instruments for the current scan.

### Bullish / Bearish Setups

Count of instruments with a confirmed bullish or bearish bias from the Bias Engine.

### Highest Confluence

Instrument with the highest Confluence Score this cycle. Shows score/100 and label.

### Active Signals

Count of TRIGGER_READY or ACTIVE instruments — immediately actionable setups only.

### DXY Direction

USD Index direction via UUP ETF. RISING = bearish pressure on risk assets and gold.

### US10Y Direction

10-Year Yield via TLT ETF (inverted). FALLING yields = risk-on environment.

## 3. Instrument Cards

### Bias Tag

BULLISH / BEARISH / NEUTRAL from the Bias Engine. Combines HTF structure, liquidity sweep direction, 1H PD zone, and session.

### Signal State Lifecycle

- **WATCHLIST** – Score >= 40. Not actionable.
- **FORMING** – Score >= 55. Structure + liquidity confirmed. Entry zone visible but not locked. Not actionable.
- **TRIGGER_READY** – Score >= 70 + RR >= 1:3. Entry zone is LOCKED — levels are now frozen. Actionable.
- **ACTIVE** – Price has entered the locked entry zone. Execute if conditions are met.
- **EXPIRED** – 4 hours elapsed without trigger. Lock released. Discard.
- **INVALIDATED** – Price closed beyond the locked invalidation level. Lock released. Do not trade.

### Proxy Symbol Badge

Gold ■ badge on cards fetching from an ETF proxy. BTCUSD and XAUUSD show no badge (direct symbols). The badge shows the ETF ticker — e.g. "■ QQQ proxy" on the NAS100 card.

### Stale Data Indicator ★

If the scanner cannot fetch fresh data (e.g. API credits exhausted), cards enter Stale Data mode. A pulsing amber banner appears at the top of the card:

- "STALE DATA — API credits exhausted. Showing last scan from [time] CST"
- Card border turns amber. All displayed values are from the last successful scan.
- On the next successful scan, the stale banner disappears automatically — no manual action needed.

■ *Stale data is preserved across backend restarts. The last successful scan result is saved to Firebase and reloaded on boot, so the dashboard always shows the most recent known state.*

## 4. ICT Analysis Grid

Eight boxes per card. Click any card to see full detail in the modal.

### STRUCTURE (5m, 15m, 1H)

HH/HL (bullish) or LH/LL (bearish) via 3-bar fractal pivots, last 20 candles.

- BOS — Break of Structure (trend continuation)
- ChoCh / MSS — Break against prior trend (reversal signal)

### LIQ. SWEEP (15m + 1H + 4H)

Equal highs/lows within 0.1% tolerance. Sweep confirmed when price wicks beyond and closes back within 3 candles.

- 4H pools +30% strength | 1H pools +15% strength
- Multi-TF agreement: +10 pts (2 TFs) or +15 pts (all 3 agree)

### DISPLACEMENT (5m)

Body > 60% of range, range > 1.5x ATR, closes beyond a swing.

- BULLISH / BEARISH / NONE

### FVG (5m)

Three-candle imbalance. Bullish: C3 low > C1 high. Bearish: C3 high < C1 low.

- Bullish FVG / Bearish FVG / NO FVG

### PD ZONE (1H Bias)

1H dealing range — last 20 candles. Equilibrium = (1H high + 1H low) / 2. 1% tolerance band prevents false flips.

- PREMIUM — above midpoint (favour shorts)
- DISCOUNT — below midpoint (favour longs)
- Alignment: +10 pts | Misalignment: -5 pts

### BOS / CHOCH (5m)

Most recent confirmed structural event in isolation.

- BOS (continuation) | ChoCh (reversal)

### KILL ZONE (Real-time, UTC-based sessions)

Highest-probability institutional windows. Session times are UTC-defined; scanner is active during CST hours.

- London Open 02:00–05:00 UTC | NY Open 07:00–10:00 UTC
- London Close 10:00–12:00 UTC | NY PM 13:30–16:00 UTC
- Note: NY Open (07:00–10:00 UTC) = 01:00–04:00 CST (overlaps pre-market)

### SMT (5m)

Correlated pair divergence. NAS100 vs SPX500 and NAS100 vs US30.

- SMT Divergence detected | NONE — pairs in sync

## 5. Confluence Score

Weighted sum of all engine outputs, 0–100. Displayed as a ring gauge on each card.

### Weights

- Market Structure **20%** (20 pts)
- Liquidity Sweep (15m+1H+4H) **20%** (20 pts + up to 15 bonus)
- Displacement **15%** (15 pts)
- FVG / Order Block **10%** (10 pts)
- Session / Kill Zone **10%** (10 pts)
- PD Array (1H Bias) **10%** (10 pts +10/-5 alignment)
- SMT Divergence **10%** (10 pts)
- Macro Context **5%** (5 pts)

### Score Labels

- **0–39 — IGNORE**
- **40–54 — WATCHLIST**
- **55–69 — DECENT**
- **70–84 — STRONG**
- **85–100 — ELITE**

## 6. Entry Zone & Targets

Calculated once a setup reaches FORMING or above.

### Entry Zone

Most recent OB or FVG on 5m — high and low of the candle before displacement.

### Invalidation

For longs: low of displacement candle. For shorts: high.

### Target 1

Nearest opposing liquidity — BSL for longs, SSL for shorts.

### Target 2

Full measured-move — opposite extreme of the 1H dealing range.

### Risk / Reward

(T1 – Entry midpoint) / (Entry midpoint – Invalidation). Minimum required: 1:3. Setups below 1:3 are held at FORMING by the scanner.

■ *Entry levels are mechanical. Always apply your own analysis before executing.*

# 7. Asset Detail Modal

Clicking any instrument card opens the Asset Detail Modal — a full breakdown of every data point the scanner has calculated for that instrument. The modal is divided into seven panels.

### How to open the modal

Click or tap anywhere on an instrument card. Press Escape or click outside to close.

> ■ *All data reflects the state at the time of the most recent scan. It does not update in real time — use Scan Now if you need current data (within trading hours).*

## Modal Header

Shows: instrument symbol, directional bias tag, and a subtitle with full name, signal state, and confluence score.

**Symbol + Bias** — e.g. NAS100 BULLISH — coloured green/red/grey

**Subtitle** — Nasdaq 100 (QQQ) • TRIGGER_READY • Confluence: 74/100

## Panel 1 — Setup Explanation

Plain-language summary of the setup, auto-generated each scan. Synthesises bias, signal state, key confluence factors, and active ICT conditions.

#### Stale data warning (when applicable)

If the instrument is in stale mode, an amber warning block appears at the top of this panel: "■ STALE DATA — API credits exhausted. Displaying last successful scan from [date/time] CST." All price and signal data below the warning is from the cached scan.

#### Proxy note (proxy instruments only)

An amber info bar shows: "■ Data sourced from QQQ ETF proxy — logical market: NAS100." Reminder that price data comes from the ETF, not the real index.

## Panel 2 — Entry Zone & Targets

All price levels for this setup. Fields show dashes until the setup reaches FORMING state.

#### Signal Called ★

The CST date and time when this signal first reached TRIGGER_READY state. This is the moment the entry zone was locked and the setup became actionable. Format: "Mar 10, 2026, 09:45:00 AM CST". Shows "—" if the signal has not yet reached TRIGGER_READY.

> *Calc: r.timestamp at moment of first TRIGGER_READY lock*

#### Direction

LONG or SHORT — derived from the Bias Engine primary direction.

> *Calc: bias.primaryDirection*

### Entry Zone

A price range, not a single level. High = top of the most recent bullish OB or FVG on 5m. Low = bottom of the same structure. This is where a limit order would be placed.

*Calc: entryZoneLow to entryZoneHigh*

### Invalidation

The price level at which the setup is considered structurally failed. For LONG: low of the displacement candle. For SHORT: high of that candle. If price closes beyond this, signal transitions to INVALIDATED.

*Calc: displacement candle low (long) / high (short)*

### Target 1

Nearest opposing liquidity in the trade direction. LONG: nearest equal highs or prior swing high (Buyside Liquidity). SHORT: nearest equal lows or prior swing low (Sellside Liquidity). Conservative take-profit — first tranche closes here.

*Calc: nearestBuyside.price (long) or nearestSellside.price (short)*

### Target 2

Full measured-move — opposite extreme of the current 1H dealing range.

*Calc: pdArray.primaryRange.high (long) or .low (short)*

### Risk / Reward

Shown as X:1 with a green checkmark if >= 1:3, or red warning if below. Setups below 1:3 are held at FORMING and will not advance to TRIGGER_READY.

*Calc: (T1 – entryMid) / (entryMid – invalidation)*

### Entry Reasoning

One-line description of why this entry zone was selected.

*Calc: Generated from displacement + OB/FVG data*

> ■ *Entry Zone is only populated when signal state is FORMING or above. In WATCHLIST state all levels show "WAIT FOR SETUP" or dashes.*

## Entry Zone Locking

Once a signal reaches TRIGGER_READY, the entry zone levels are permanently locked until the trade resolves. The exact entry range, invalidation, and targets shown at the moment of TRIGGER_READY will not change — even if bias shifts, confluence dips, or new scans run. The modal shows a green ■ LOCKED badge on the Entry Zone panel.

### What locks the entry zone

Signal transitions to TRIGGER_READY for the first time with a valid entry zone and RR >= 1:3. Exact price levels at that moment are frozen: entry range, invalidation, T1, T2, RR.

### What clears the lock

#### Invalidation hit

Every scan checks whether current price has closed beyond the locked invalidation. LONG: current price < invalidation. SHORT: current price > invalidation. Signal moves to INVALIDATED and lock is released.

#### Signal expires

4 hours elapsed since first TRIGGER_READY without trade activating. Signal moves to EXPIRED and lock is released.

### What does NOT clear the lock

- A bias flip to NEUTRAL on the next scan cycle
- Confluence score dropping below TRIGGER_READY threshold
- Kill zone session ending
- A new sweep or FVG being detected that contradicts the setup
- Manually triggering Scan Now

> ■ *Only a structural price event — hitting the invalidation — should end a locked setup. Short-term noise between scans should not erase a valid trade.*

### Panel 3 — Confluence Score Breakdown

Visual bar chart showing how each of the eight confluence components contributed to the overall score. Bars are colour-coded: Green (>60) = strong, Gold (35–60) = moderate, Red (<35) = weak.

### Panel 4 — Market Structure

Four fields: 5m Structure, 1H Structure, Last BOS, MSS/ChoCh. Ideal setup: 1H BULLISH + 5m BULLISH + recent 1H BOS. A 1H MSS in a downtrend is high-alert — potential major reversal entry.

### Panel 5 — Liquidity & PD Array

Six fields: Recent Sweep, Sweep Quality, PD Zone (1H Bias), 1H Dealing Range, Nearest BSL, Nearest SSL. ICT principle: market moves from liquidity pool to liquidity pool. BSL swept + price in premium → SHORT conditions. SSL swept + price in discount → LONG conditions.

### Panel 6 — Macro Context

DXY (via UUP) and US10Y (via TLT, inverted) directional filters. FALLING DXY + FALLING yields = bullish macro. RISING DXY + RISING yields = bearish macro. Weighted at 5% of confluence score.

### Panel 7 — SMT Divergence

Smart Money Technique: correlated pair divergence on 5m. NAS100 vs SPX500 and NAS100 vs US30. If NAS100 makes a lower low but SPX500 does not — bullish SMT signal. Adds 10 pts to confluence when present and directionally aligned.

## How to read the modal before executing

Use this checklist when a setup reaches TRIGGER_READY or ACTIVE. Work through each panel in order.

#### Step 1 — Header

Confirm bias direction and state = TRIGGER_READY or ACTIVE. If not, close the modal.

#### Step 2 — Setup Explanation

If an amber STALE DATA warning is present, confirm the timestamp — data may be hours old. Read the narrative. If it does not match current market conditions, investigate.

#### Step 3 — Entry Zone & Targets

Check Signal Called timestamp — know exactly when the scanner committed to this setup. Confirm ■ LOCKED badge is present. Verify R:R >= 1:3. If below 3.0 the scanner held at FORMING — do not execute.

#### Step 4 — Confluence Breakdown

If Market Structure AND Liquidity Sweep are both red, the setup lacks its two most important drivers.

#### Step 5 — Market Structure

Confirm 1H Structure matches bias. Counter-trend setups carry higher risk.

### Step 6 — Liquidity & PD Array

LONG: SSL swept + DISCOUNT zone. SHORT: BSL swept + PREMIUM zone.

### Step 7 — Macro Context

Macro modifier strongly opposing your direction (< -0.5 for longs, > +0.5 for shorts) = meaningful headwind.

### Step 8 — SMT Divergence

Bonus confirmation if present and aligned. Setup valid without it.

■ *This checklist is a framework, not a rule. The scanner identifies setups — you make the final decision.*

## 8. Scan Now & Active Window

### Active window

- Scanner runs 06:00–16:00 CST, Monday–Friday only.
- Auto-scan fires every 15 minutes within this window.
- Outside the window: cron skips the job and logs "Outside trading hours — scan skipped".
- Dashboard status pill shows "OFF HOURS" in red if Scan Now is pressed outside the window.

### Scan Now button

- Triggers an immediate out-of-cycle scan (within trading hours only).
- Takes ~3–4 minutes (sequential API calls, 3 timeframes per instrument).
- Consumes 17 API credits.
- Disabled with "OFF HOURS" message outside 06:00–16:00 CST.

## 9. Stale Data Mode

When the scanner cannot fetch fresh data — most commonly because the Twelve Data free plan daily credit limit (800) has been reached — the dashboard enters Stale Data mode instead of showing blank or broken cards.

### What happens when credits run out

- The scanner detects an empty API response (no candles returned).
- Instead of overwriting the display with blank data, it returns the last successful scan result.
- The result is flagged as stale: stale=true, staleReason, staleSince timestamp.
- Cards continue to show all signal data, entry zones, confluence scores — unchanged.

### Visual indicators

- Pulsing amber dot + banner at top of affected card: "STALE DATA — Showing last scan from [time] CST"
- Card border turns amber.
- Modal Panel 1 shows a detailed amber warning with the exact stale timestamp and reason.

### Persistence across restarts

The last successful scan result is saved to Firebase Firestore after every scan. On backend restart, the scanner hydrates the in-memory cache from Firebase before the first scan runs. This means:

- If you restart the backend while credits are exhausted, the dashboard still shows the last known state.
- All cards appear immediately with stale banners — no blank dashboard on startup.
- Console log on boot: "Hydrated 7 instrument(s) from Firebase — marked as stale until first successful scan".

### Automatic recovery

Credits reset daily at midnight UTC (Twelve Data policy). On the first successful scan after reset, stale flags clear automatically instrument by instrument. No manual action required.

## 10. Proxy Symbol Reference

ETF proxies are used because direct index symbols require Twelve Data Grow plan.

### NAS100 → QQQ

**Invesco QQQ Trust** — Tracks Nasdaq-100. ~99% correlated.

### SPX500 → SPY

**SPDR S&P; 500 ETF** — Tracks S&P; 500. ~99% correlated.

### US30 → DIA

**SPDR Dow Jones ETF** — Tracks DJIA. ~99% correlated.

### DXY → UUP

**Invesco DB USD Index** — Directional proxy for DXY.

### US10Y → TLT

**iShares 20+ Yr Treasury** — INVERTED — falling TLT = rising yield.

### To use real index symbols

Upgrade to Twelve Data Grow plan, then update **providerSymbol** in **backend/src/config/index.ts**:

- **NAS100** → **NDX** and set isProxy: false
- **SPX500** → **SPX** and set isProxy: false
- **US30** → **DJI** and set isProxy: false
- **DXY** → **DXY** and set isProxy: false
- **US10Y** → **TNX** and set isProxy: false

## 11. Quick Reference Cheat Sheet

### Signal States

- **WATCHLIST** – Monitor.
- **FORMING** – Entry zone visible, not yet locked.
- **TRIGGER_READY** – ■ LOCKED — levels frozen. Signal Called timestamp set. Actionable.
- **ACTIVE** – Price inside locked entry zone. Execute if conditions met.
- **EXPIRED** – 4hr elapsed. Lock released. Discard.
- **INVALIDATED** – Invalidation price hit. Lock released. Do not trade.

### Modal Checklist (8 steps)

- **1.** Header — state = TRIGGER_READY or ACTIVE
- **2.** Explanation — check for STALE warning, narrative makes sense
- **3.** ■ Entry Zone — Signal Called visible + LOCKED badge + R:R >= 1:3
- **4.** Confluence — Structure + Liquidity not both red
- **5.** Structure — 1H matches bias direction
- **6.** Liquidity — sweep direction + PD zone aligned
- **7.** Macro — modifier not strongly opposing direction
- **8.** SMT — bonus confirmation if present and aligned

### Scan Schedule (CST)

- **06:00 AM** — Boot: 1H + 4H pre-warm (14 credits). Initial scan runs.
- **Every :00/:15/:30/:45** — Auto-scan within 06:00–16:00 window (17 credits each)
- **09:00 AM** — 4H candle refresh (7 credits)
- **01:00 PM** — 4H candle refresh (7 credits)
- **04:00 PM** — Last auto-scan of the day. Scanner goes off-hours.

### ICT Kill Zones (UTC-based)

- **London Open** 02:00–05:00 UTC
- **New York Open** 07:00–10:00 UTC
- **London Close** 10:00–12:00 UTC
- **New York PM** 13:30–16:00 UTC

### Daily Credit Budget

- **Per scan:** 17 credits (5 instruments × 3 TFs + 2 macro)
- **Scans/day:** 40 (06:00–16:00 CST, every 15 min)
- **Scan credits:** 680/day
- **Boot HTF pre-warm:** 14 credits (one-time)

- **4H refreshes:** 14 credits (9AM + 1PM × 7 instruments)
- **Total daily:** ~708 credits | Free plan limit: 800 | Headroom: ~92

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